

THAT WHICH IS CLAIMED:

1. A high production nutcracking apparatus comprising

5       a turret mounted on a machine frame for rotation about a horizontal axis, said turret comprising a plurality of cracking units which are uniformly spaced about the periphery of the turret, and an end plate disposed perpendicularly to said axis and located so that  
10       the cracking units are on one side of said end plate, with each of the cracking units comprising an anvil and a cracking shuttle which are moveable toward and away from each other by pressurized air which is admitted into and exhausted from the units via a plurality of ports formed  
15       in the units, and with the ports being connected to said one side of the end plate and so as to communicate with respective openings which extend through the end plate,

          a valve plate fixedly mounted to the machine frame so as to be positioned parallel to and spaced from the  
20       other side of the end plate, said valve plate including a plurality of inlet openings which are positioned for sequential alignment with selected ones of the openings in the end plate as the turret is rotated, and with the inlet openings each communicating with an air delivery  
25       line on the side thereof opposite the end plate, and said valve plate further including at least one outlet opening positioned for sequential alignment with selected ones of the openings in the end plate as the turret is rotated, and with the outlet opening in said valve plate being  
30       connected to an exhaust line on the side thereof opposite the end plate,

          an air delivery system for delivering pressurized air which includes an oil mist component to each of said air delivery lines such that the pressurized air is

selectively delivered to and exhausted from said cracking units during rotation of the turret,

5 a filtering pad fixedly mounted in the space between said end plate and said valve plate, with said filtering pad having a plurality of inlet openings aligned with respective ones of the inlet openings in said valve plate, and at least one outlet opening which is aligned with the outlet opening in said valve plate, and with the filtering pad forming a filtering barrier which is  
10 aligned with at least some of the openings in the end plate when such openings receive exhausted air from the associated cracking unit,

an oil recovery system for recovering oil from the pressurized air after it has been delivered to and  
15 exhausted from the cracking units comprising

(a) a cowling sleeve attached to said valve plate so as to surround the radial periphery of the end plate and the filtering pad, said cowling sleeve having an annular free end remote from said valve plate and  
20 defining an annular collection chamber surrounding the periphery of said filtering pad and said end plate, a drain communicating with the lower portion of said collection chamber, and an annular barrier member for restricting the flow of oil which is received in the  
25 collection chamber in a direction toward said free end of the cowling sleeve and so that the oil is guided into said drain,

(b) an oil tank for receiving any oil exiting from said drain of the collection chamber and from the exhaust  
30 line which is connected to the outlet opening of the valve plate, and

(c) an oil recirculation system for delivering oil from the tank to the air delivery system to form the oil

mist component of the pressurized air delivered to the cracking units.

2. The apparatus as defined in Claim 1 wherein the oil tank has a first upper chamber communicating with the drain and with said exhaust line, a second upper chamber communicating with an outlet line, a lower oil delivery line communicating with said oil recirculation system, and an air porous baffle plate positioned to extend downwardly into oil in the tank and separating the first and second upper chambers from each other.

3. The apparatus as defined in Claim 1 wherein said turret further includes an axial support shaft extending along said horizontal axis, with said shaft extending through aligned openings in said end plate, said filtering pad, and said valve plate, and including a resilient sealing gasket disposed between said shaft and each of said end plate and said valve plate.

4. The apparatus as defined in Claim 1 wherein the annular barrier member comprises a resilient annular gasket positioned to extend between the cowling sleeve and the outer periphery of the end plate or a turret cover plate which encircles the outer periphery of the end plate.

5. The apparatus as defined in Claim 4 wherein the resilient annular gasket is configured to generally seal the collection chamber to the passage of air and so that the chamber becomes somewhat pressurized by the air which enters and exhausts from the cracking units and then passes through the filtering pad to the collection chamber.

6. The apparatus as defined in Claim 5 wherein the barrier member further comprises an annular brush positioned immediately adjacent the free end of the cowling plate and extending at least substantially  
5 between the cowling member and the outer periphery of the end plate or a turret cover plate which encircles the outer periphery of the end plate.

7. The apparatus as defined in Claim 1 wherein said barrier member comprises an annular shoulder positioned  
10 on the outer periphery of the end plate so as to radially sling onto the cowling sleeve any oil moving along the outer periphery of the end plate and toward the free end of the cowling plate.

8. The apparatus as defined in Claim 7 wherein the  
15 annular shoulder comprises a resilient annular ring which is secured about the outer periphery of the end plate or about the outer periphery of a turret cover plate which encircles the outer periphery of the end plate.

9. The apparatus as defined in Claim 8 wherein the  
20 barrier member further comprises an annular dam extending from the cowling sleeve radially toward said turret.

10. The apparatus as defined in Claim 1 where in the barrier member comprises a resilient annular ring of generally circular cross section mounted about the outer  
25 periphery of the end plate or a turret cover plate which encircles the outer periphery of the end plate, with the ring being positioned to engage the annular free end of the cowling sleeve.

11. The apparatus as defined in Claim 10 wherein  
30 the annular free end of the cowling sleeve mounts a

plastic clip which engages the annular ring with minimal friction.

12. The apparatus as defined in Claim 1 wherein the barrier member includes an annular dam extending from a location adjacent the free end of the cowling sleeve radially toward said turret.

13. A high production nutcracking apparatus comprising

a turret mounted on a machine frame for rotation about a horizontal axis, said turret comprising a plurality of cracking units which are uniformly spaced about the periphery of the turret, and an end plate disposed perpendicularly to said axis and located so that the cracking units are on one side of said end plate, with each of the cracking units comprising an anvil and a cracking shuttle which are moveable toward and away from each other by pressurized air which is admitted into and exhausted from the units via a plurality of ports formed in the units, and with the ports being connected to said one side of the end plate and so as to communicate with respective openings which extend through the end plate,

a valve plate fixedly mounted to the machine frame so as to be positioned parallel to and spaced from the other side of the end plate, said valve plate including a plurality of inlet openings which are positioned for sequential alignment with selected ones of the openings in the end plate as the turret is rotated, and with the inlet openings each communicating with an air delivery line on the side thereof opposite the end plate, and said valve plate further including at least one outlet opening positioned for sequential alignment with selected ones of the openings in the end plate as the turret is rotated,

and with the outlet opening in said valve plate being connected to an exhaust line on the side thereof opposite the end plate,

5 an air delivery system for delivering pressurized air which includes an oil mist component to each of said air delivery lines such that the pressurized air is selectively delivered to and exhausted from said cracking units during rotation of the turret,

10 a filtering pad fixedly mounted in the space between said end plate and said valve plate, with said filtering pad having a plurality of inlet openings aligned with respective ones of the inlet openings in said valve plate, and at least one outlet opening which is aligned with the outlet opening in said valve plate, and with the  
15 filtering pad forming a filtering barrier which is aligned with at least some of the openings in the end plate when such openings receive exhausted air from the associated cracking unit,

20 an oil recovery system for recovering oil from the pressurized air after it has been delivered to and exhausted from the cracking units comprising

(a) a cowling sleeve attached to said valve plate so as to surround the radial periphery of the end plate and the filtering pad, said cowling sleeve defining an  
25 annular collection chamber surrounding the periphery of said filtering pad and said end plate, and a drain communicating with the lower portion of said collection chamber,

(b) an oil tank for receiving any oil exiting from  
30 said drain of the collection chamber and from the exhaust line which is connected to the outlet opening of the valve plate, said oil tank comprising a first upper chamber communicating with the drain and with said exhaust line, a second upper chamber communicating with

an outlet line, a lower oil delivery line, and an air porous baffle plate positioned to extend downwardly into oil in the tank and separating the first and second upper chambers from each other, and

5           (c) an oil recirculation system including a pump for delivering oil from the lower oil delivery line of the tank to the air delivery system to form the oil mist component of the pressurized air delivered to the cracking units.

10           14. The apparatus as defined in Claim 13 wherein said apparatus further comprises an air vacuum system for exhausting air and any entrained debris from the vicinity of the turret, and wherein the outlet line of the oil tank is connected to said air vacuum system.

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